School Management

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STATE AND LOCAL FINANCING OF SCHOOL PROGRAMS

A good program can't be developed by educators alone; lay citizens must also study the problem

By EDGAR L. MORPHET
Guest Educational Commentator
Adapted from a talk at the 1950 AASA Convention

WE now know enough about education and about school finance that we could have an almost ideal school finance program in every state and in practically every local school system.

Unfortunately there are still only a few states that have what might be considered an excellent program. And there are many communities in nearly every state where the program of financial support is so unsatisfactory that the educational opportunities are severely limited.

Dr. Morphet is professor of education, University of California, in Berkeley

The study made last year by the Council of State Governments, published under the title "The Forty-Eight State School Systems," brings out some rather startling facts about school finance. It shows that there are still such great differences in ability to support the school program that the problem must be faced more realistically in the future if it is to be solved. It is surprising that:

1. A number of states still attempt to derive most of their school support funds from the general property tax.

2. Several still have very limited state support programs in spite of the marked inequalities that are known to exist.

3. A number of states still distribute most of their funds on a flat-grant basis that does not meet the needs.

4. Several of the states, having worked out equalization programs, still distribute funds on the basis of a fixed tax levy which is applied to assessment practices that vary greatly. This procedure results in many injustices.

Strangely enough a number of states through their state aid program are still rewarding inefficient small districts or small schools that cannot be defended, and are thus making the taxpayers of the entire state pay for these inefficiencies. Furthermore, some states have imposed such rigid limitations on local tax levies or such detailed state controls that local initiative and leeway are being severely handicapped. In other states the amount of state aid provided for local school systems depends to a great extent on the ability of local school officials to make a case. It thus involves elements of subjectivity that cannot be defended.

This list of indefensible practices could be continued at some length. Nearly every state has some unsolved problems that have not yet been satisfactorily faced. Some states have so many problems that they hardly know where to begin.

In spite of these discouraging situations we have made much progress. A few states have developed comprehensive programs that come close to meeting the needs. We are definitely on the way, even though in many parts of the country we are still using ox-cart methods in an era when jet-propulsion techniques are available for our use.

Much of our lack of progress and many of our difficulties exist because too few educators really know what constitutes a good finance program and because a large proportion of the educators have vested interests which they are seeking to protect regardless of the needs of the children.

The first prerequisite, then, if we are to solve these problems is to develop a larger proportion of educational leaders who understand fully the differences between a sound program and one that is unsound. All of us need to face the problems of school finance more intelligently and more carefully than ever before. Better understanding on the part of all educational leaders will certainly help a lot. Without such understanding our progress is bound to be slow and halting.

But even that is not enough. Educators alone cannot solve these problems. In the final analysis they can be solved only if a sufficient proportion of the lay citizens in every community and throughout every state understand the basic issues, appreciate the needs and, as a result, are in position to cooperate in developing a better program. We must find better ways of bringing about better understanding on the part of a larger proportion of the lay citizens of this country. We must involve citizens directly in our studies and in developing our plans for improving school finance. If that were done to the extent that it is possible, there is no reason why the present unsatisfactory situation should still be continued in most of the states.

In my opinion the following steps are essential if we are to solve these problems:

1. In every state, provision must be made so the citizens of every com-

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HERE'S AN ECONOMICAL SCHOOL

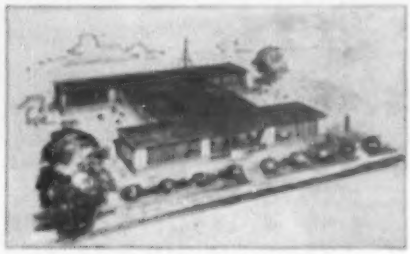
The Cole Branch School, typical of several new buildings, cost $75,000 without site or furniture

By V. HARRY RHODES
Commissioner of School Buildings
and
F. RAY LEIMKUEHLER
Supervising Architect
Board of Education, St. Louis

THE new Cole primary branch school was started last August and occupied early in 1950. It was designed to fill an immediate need to house the overcrowded Negro school population, and we believe the solution may fill a similar need elsewhere in the country.

The scheme is not to be confused with a complete, permanent school building where we would include work alcoves, running water, and acoustical correction in the classrooms. Nor are gymnasium, playrooms, auditorium, lunchrooms, and other facilities included in the branch school. The building simply provides an additional number of classrooms. The principal's office and nurse's room are really branch offices because the principal and nurse divide their time between this branch and the main school of the same name in the vicinity. The custodian and matron also divide their time between the two schools.

Our problem was to house the vastly increased school population quickly and at minimum cost. Masonry construction would have required a year or more to build, and would have cost about twice as much per cubic foot. Buildings like the Cole Branch can be built in a few months and the cost is less than 50 cents per cubic foot. They are one story high, contain not over 10,000 square feet of floor area, and are built of incombustible materials. The St. Louis building code with which they comply permits extraneous combustible items such as floor covering, door and window trim, chalk rail, base and picture mold. Concealed wood, such as furring strips, are flameproofed.



We are building several branch schools of similar construction for both white and colored children. The Cole Branch School has eight rooms; others have six. In these we omit the two rear classrooms thus making a T-shaped plan instead of an H.

Some minor variations are made in the different schools. One building will have directional glass block and vision strip instead of all clear glazing. We can then determine advantages and disadvantages of the different types of fenestration by living with them in all kinds of weather and on all exposures.

Of several branch schools, three are now occupied, two are under construction, and two are to be built in the near future. One of the schools uses stoker fuel; the others use gas for a warm air furnace. In the interest of economy, aluminum duct work is exposed in the corridors. Classroom doors have louvered panels. The cement floor is separated from the outside walls by an asphalt-saturated fiber strip. It is sealed from the cinder fill by two layers of roofing felt, and its surface is waterproofed before the cork carpet is laid.

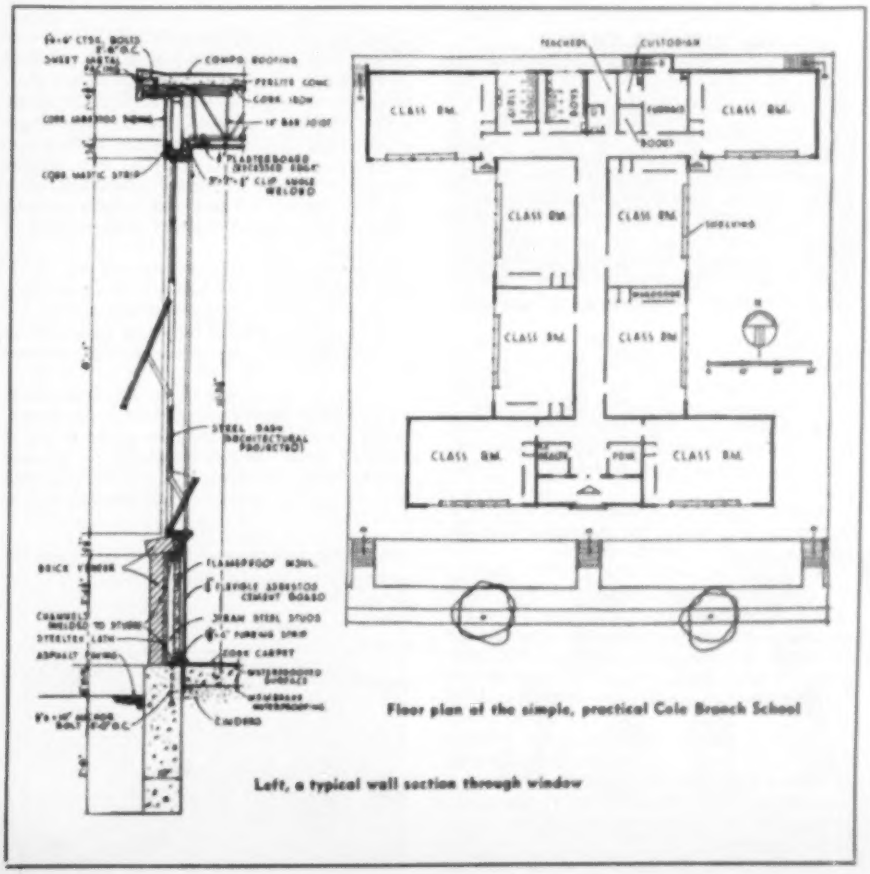
Cork carpet, incidentally, is a favorite floor covering of the St. Louis school system. It is treated with three coats of a floor sealer, waxed before use, and then sealed twice a year thereafter. Walls are insulated with a one-inch treated cotton blanket, and the roof is poured, lightweight, insulating concrete two and three-quarter inches thick. A tar and gravel combination makes the deck waterproof. No further insulation is required at roof or ceiling as the construction is rated with a U factor not exceeding .23.

The Cole branch occupies a site owned by the board of education on which there had been a frame portable school. The former frame structure was destroyed by fire some years ago. The lot is not large, but allows our minimum of 60 square feet of play area per pupil. The new building cost $75,000 without furniture and exclusive of the cost of the site.

Philip Hickey, superintendent of instruction, and the commissioner of school buildings were in favor of a brick "facing" or veneer for this one-story school. For economy a compromise was made by facing the lower part to the height of the window sill with brick bonded to the "Stran Steel" studs with "Steeltex" lath. The upper part was faced with corrugated asbestos board. The brick gives a masonry effect.

Now that we have exact contract figures on the various materials and trades we find that brick veneer to the full story height would have cost about $6,000 more, or 10 percent of the general contract. Would the extra expense be justified? For this type of building we don't think so. In fact, the light color of asbestos board should look cheerier than some other schools in the community.

The lighter colors on the building interior—walls, ceilings, chalkboard, and furniture—all contribute to a brighter and more cheerful school. About a year ago we inaugurated a system of color standards for interior walls: pastel shades of blue for south rooms, peach at north, rose at east, gray at west, and green in corridors and stairs. Standardization of classroom wall colors was devised by our general painter foreman, Paul Smith. These colors are used in the Cole school. But we did not varnish the dado since the asbestos board is already a hard, durable, light-colored surface. Fluorescent auxiliary lighting installed under the supervision of our superintendent of shops, Hilliard Mueller, is provided for use on dark days. Other usual features, such as asphalt-paved play yard and wire fencing, are same as for newer complete schools.



Floor plan of the simple, practical Cole Branch School

Left, a typical wall section through window

In center, dividing two kindergarten rooms is the work area used for pottery, painting, and the like

Block room between kindergartens is also for storage

"IT'S MANY LIGHT YEARS AHEAD"

That's what teachers and the citizens of Inglewood, California, say about their new Warren Lane Elementary School

Do not train boys to learning by force and harshness, but lead them by what amuses them, so that they may better discover the bent of their minds, said Plato about 370 B.C.

Every man who rises above the common level has received two educations: the first from his teachers; the second, and more personal and important, from himself, stated Edward Gibbon in 1795.

Anyone who has passed through the regular gradations of a classical education, and is not made a fool by it, may consider himself as having had a very narrow escape, declared William Hazlitt in 1821.

By ROBERT E. CRALLE
Superintendent of Schools, Inglewood, California

WHAT these thoughts had in connection with the planning and execution of Warren Lane Elementary School, in Inglewood, California, is loosely connected with Mark Twain's remark about the weather. We had been talking for a long time about education and the proper facilities for it, and we wanted to do something about it.

There has always been, and probably always will be, a wealth of argument pro and con over education, its practices and procedures. In the new Warren Lane school we believe we are light years ahead of a decade ago in providing space for education, where children may learn less painfully and more effectively.

Shortage of facilities, the problem facing the Inglewood City School System, was not unique in 1947, but the problem was intensified because of the abnormal population expansion during the war years and immediately following the war. In 1931 our population was about 19,000. In 1940 it was about 30,000, and today it is well over 50,000.

In the early thirties we planned two bond issues which were defeated because of the conditions of depression years. However, in 1940 the housing situation became so acute that the people voted an extra tax of 20 cents for seven years. This raised about $60,000 each year during that period, and the board took about $40,000 annually from current expenses, altogether building up a fund of about $700,000. But this amount was not enough to meet the demand.

A bond issue of $1,250,000 was passed in 1947. But this was still not enough in our over-all expansion, since by 1949 the number of schools increased from five in 1930 to 10 in 1949. (During the depression years the situation had been slightly relieved by federal contributions toward four additions to school plants.)

Strong support for passage of the bond issue was given by a school survey prepared by the architect in advance of the election.

Success in the bond issue of 1947 was due in large part to the Citizens' Advisory Committee of the school system, composed of representatives from all groups and organizations interested in community problems. This committee, even now, is trying to interpret new building needs in preparation for another bond issue.

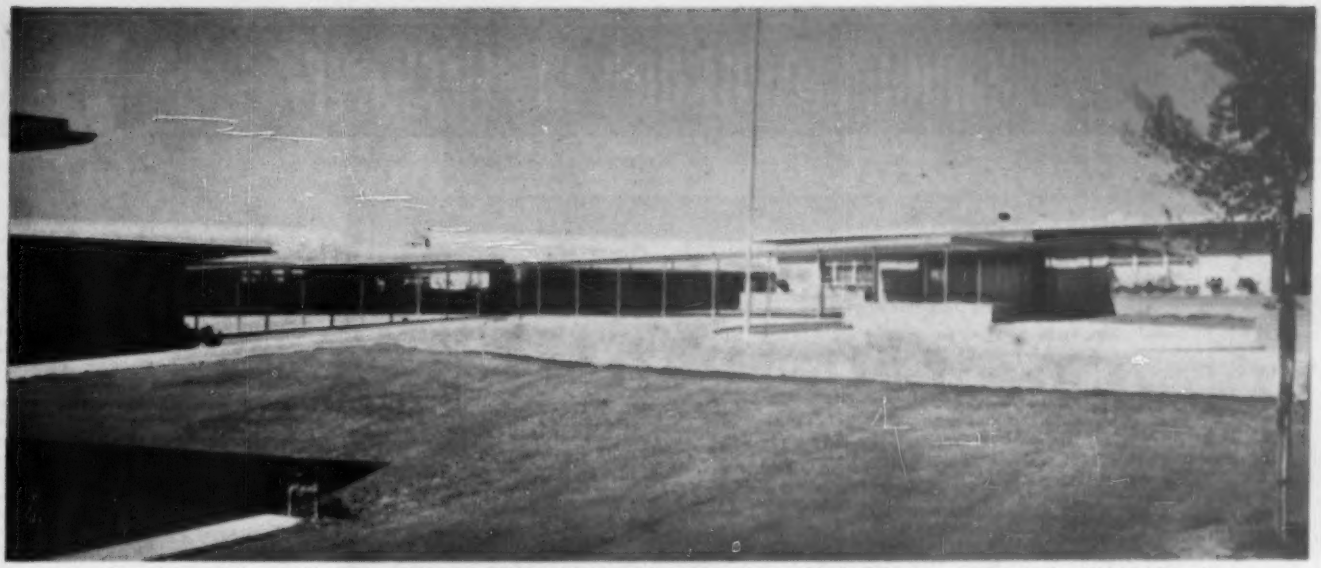
Highly important in planning the Warren Lane school were the innumerable meetings between a committee of school principals, other administrators, and the architect, to discuss the relationship of school buildings to the educational program.

At this point, the meaning of the opinions expressed by such people as Plato, Gibbon, and Hazlitt, and all others who have had opinions on education, became increasingly meaningful. In trying to arrive at some conclusions about a new building to house students, the school officials and the architects were looking for conclusions that would eliminate the requirements of Hazlitt's "regular gradations of a classical education," that *would* aid individual children to "discover the bent of their minds," as advised by Plato.

The committees knew all too well that if the progressive type of education it was practicing were to be given its greatest opportunity for further success, it must no longer be bound by the limitations of the schoolroom of previous eras.

All were in agreement, at the final count, upon certain basic concepts where the educational program and the new type of school building could become integral parts of each other. First of all it was emphasized that school buildings should be functional as well as

The outdoor assembly area is a fine innovation here



General view of the new Warren Lane Elementary School showing outdoor assembly area. The kindergarten rooms are in the right background

structurally sound and architecturally beautiful.

It was the conviction of the school system's administration and staff that the most desirable condition of teaching and learning was achieved when teachers and children could meet together in a normal living situation. Therefore the classrooms and general plan were to conform to this idea as closely as possible.

The "flexible classroom" was the result, with movable furniture throughout. The rooms can be used for many things, adjusted to what the students are doing and to the needs of the moment.

It is the conviction of the school personnel that the main goal in education is to teach children how to live together. Working and playing together in a learning situation under the most natural conditions possible in a classroom is the best contribution of the flexible classroom.

This is particularly important in primary grades, where the transition from home to school should be thoughtfully considered in the educational program.

In a classroom that is rigid, with seats screwed to the floor, discipline problems also arise more often unless there is a very hard-boiled teacher. In a flexible classroom, where teacher and pupils work cooperatively, the needs of the work control the behavior of the children.

There has been much discussion of the advisability of toilet rooms adjoining classrooms. Installed at Warren Lane they have been received without serious criticism by teachers, pupils, and parents.

As a matter of fact, a group of mothers once came to the board of education to criticize our unsupervised, isolated toilet rooms in the traditional school building. The toilet rooms adjoining classrooms are used with the same wholesome behavior that a bathroom in a private home is used when a group of boys and girls are present, and both teachers and mothers have accepted them as an educational boon.

During the preliminary planning stages, a report was sent to us by Mrs. Rhea Moyes, principal of Warren Lane, regarding her survey of reactions by the staff and parents. Some of her findings were helpful in giving support to the general plan and in reviewing certain

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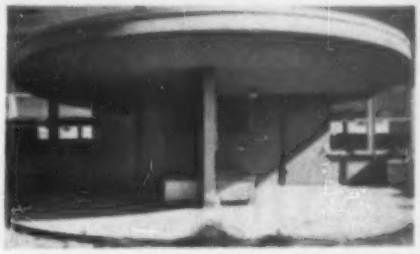
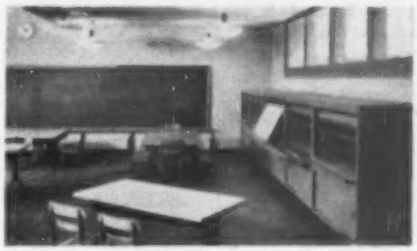


Circular covered outdoor work area, work benches

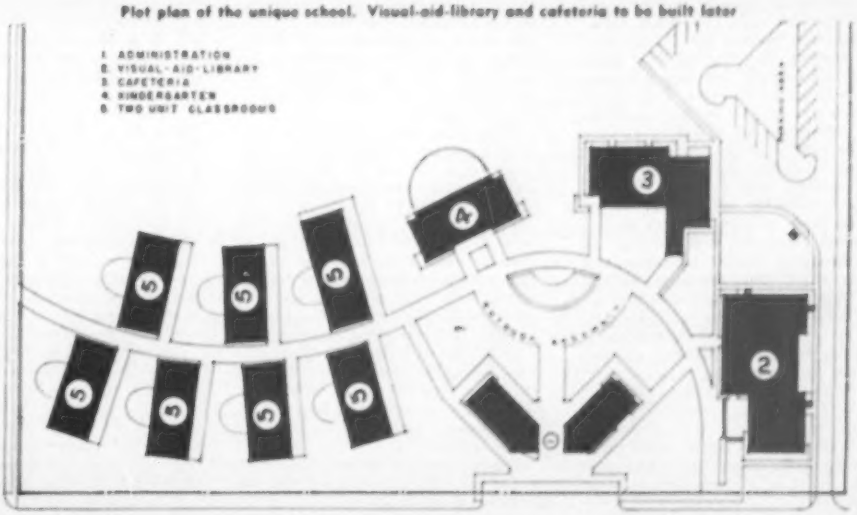
This is the east row of classrooms of the school



South wall of typical classroom, movable cabinets

Outdoor corridors feature attractive planting also

Plot plan of the unique school. Visual-aid-library and cafeteria to be built later



SELECTION OF THE FROZEN FOOD CABINET

Do you want to freeze as well as store food?

That will make a difference in your choice

By MARY FARNAM
Editor, School Management's School Lunch and Cafeteria Department, and Director of School Cafeterias, Cleveland Heights

HAVING a frozen food cabinet in the school cafeteria is like have a bank account where deposits are made at the most convenient and wisest time and withdrawals are made as needed to get the most benefit, and to meet emergencies.

A frozen food cabinet is a modern tool. It will save you money and will improve quality and service of food. If you are building a new cafeteria, you will probably include a frozen food cabinet or freezer room in the layout along with the other standard equipment. Schools already built and equipped will want to consider the selection of a frozen food cabinet as an additional piece of equipment. Frozen food cabinets or freezers come in various sizes, types, and capacities. There are many different makes from which to choose; among them you will find one best fitted to your needs.

Refrigeration as a method of prolonging the length of time foods may be kept has been used for many years. In the last decade refrigeration as specifically applied to freezing foodstuffs and preserving foods already so processed has made great strides. It might well be considered a new science. Along with this development came the manufacture of various types of refrigeration to freeze and store these foods.

Let us assume that you wish to purchase refrigeration that will adequately meet your needs for the efficient use of frozen foods. A mechanically refrigerated cabinet will furnish the type of low temperature needed for the freezing and storage of frozen food.

The National Electrical Manufacturers Association has established standards for rating the storage capacity and for testing freezers for such use. While these standards are written for "home and farm" freezers, they also apply to most frozen food cabinets that you will consider purchasing. Excerpts from these standards are quoted below from N.E.M.A. publication No. 45-105.

The quality of frozen foods, vegetables, meats, and so forth, is dependent on many factors such as the type, variety, maturity, and original quality of the food products as well as the handling before and after freezing; on the method of freezing, packaging, and the length of time of storage; and on the final defrosting and cooking.

The (home) freezer obviously can influence only two of these factors, namely, the rate of freezing and the temperature range.

For the long-time Storage of frozen foods (six months to a year), 0 degrees Fahrenheit has been established by laboratory tests and by actual practice based on edible quality and vitamin content as a satisfactory temperature.

For short-time storage, higher temperatures are satisfactory. For example, a temperature of 10 degrees Fahrenheit is adequate for storage of two or three months, and a temperature of 20 degrees Fahrenheit for storage of use to two weeks. (Ice cream and frozen foods in syrup should not be stored, even for a comparatively short time, at a temperature higher than 10 degrees.)

With respect to "speed of freezing," it is important to note that the temperature of the air in the freezing compartment is not necessarily indicative of the rate of freezing ability or the capacity of a (home) freezer. The rate at which it passes through its freezing zone is the important consideration. This is determined by various factors such as the amount and type of load and its distribution in the cabinet; the type and size of the container; the thermal resistance to heat flow from the food to the refrigerant as affected by contact, air circulation, and so on, by the temperature difference; and by the available capacity of the refrigerating system.

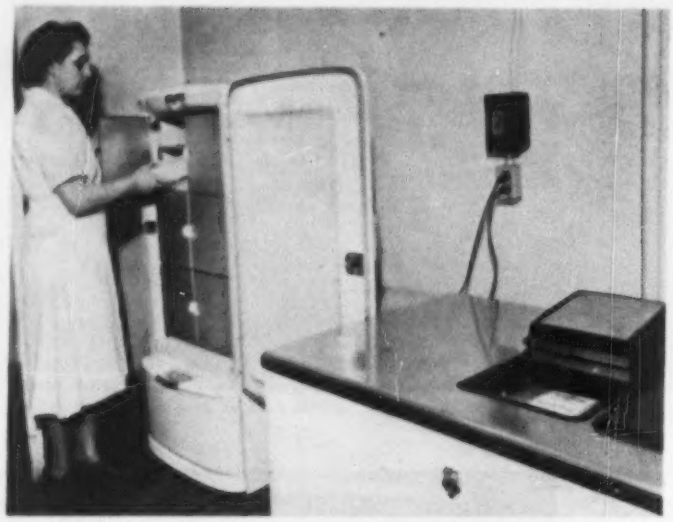
Keeping in mind these essential points, the specific points of comparison and consideration should be checked next. There are really only two types of food freezers, the "chest" and the "upright" types.

A combination type consists of a regular refrigerator containing a frozen food section. This combination is found in some household-size refrigeration units and in commercial-size walk-in boxes containing a frozen food section. The latter are usually included in the layout when a cafeteria is equipped originally.

The chest type is low and has doors or lids in the top of the cabinet. In appearance boxes of this type look like the standard ice cream cabinet. They include freezers up to 30 cubic feet capacity. The upright type of freezer is higher. Outwardly it closely resembles the household type of refrigerator or the standard refrigerator we call a "reach-in" box in our cafeterias. This type of freezer has one or more doors which open at the front. If equally well built, either type will operate equally well.

The upright type requires less floor space than the chest for the same cubic capacity, but space allowance must be made for the swing of the doors when open. More costly construction is required for equally efficient operation of the chest type and therefore it costs a little more for equal capacity.

It is claimed that the chest type has a natural advantage in maintaining low temperatures, since when the lid is lifted there is very little exchange of cold dry air with the outside warm moist air. (Cold air is heavier than warm air.) In an upright-type freezer the cold air tends to spill out when the door is opened. Most upright types have one or more sets of inside doors to prevent this action when the outside door is open. But the heavier hinges and supports required for the front opening door also conduct more heat to the inside of the freezer! Which type of freezer is more convenient is really a matter of personal opinion. We use both types and each has advantages and disadvantages, to my way of thinking.



Both upright and chest-type frozen food cabinets have their advantages

The chest-type freezer may have one or more compartments. If it has only one it is necessary to use the space both for quick freezing and for storage. Multiple compartment freezers usually provide a separate quick-freeze section which protects foods already stored from excessive temperature changes while other food is being frozen. The rise of temperature of the stored food is less, of course, when this food can be kept entirely separate from the food that is being quick-frozen.

Lower temperatures are required to quick-freeze food than to hold it in correct storage temperature. Research has proved that better products result when foods are frozen in a separate compartment at sub-zero temperatures. Therefore, if you wish to use your frozen food box to quick-freeze a large proportion of your food you will need a special quick-freeze compartment. However, if you are only planning to freeze leftovers or a small portion of the foods you use, you may not need this compartment. In defrosting the chest type it is necessary to remove all foods since loosened frost and water drop to bottom of the cabinet. A few models have a drain in the bottom of the chest which eliminates this step.

Irregularly shaped packages are easier to store in a chest type if the compartments are large. Some chest freezers are equipped with inset baskets for easy removal of all the food in one section, but this requires lifting a considerable amount of weight, and the basket and frame take up precious space in the freezer. If all of your employees are women you want to eliminate as much weight-lifting as possible. It is difficult for a woman to lift a 30-pound can of frozen fruit up and out of a chest freezer even though she only does it occasionally. In a chest freezer the hardest place to reach is the back bottom part of any section.

The sides and bottom of some chests are the only parts containing refrigeration coils. Plates containing extra refrigeration in the dividing sectors of the box are found in some makes.

The upright-type freezer may contain either shelves or drawers to section off the box. As in the case of the basket inset in the chest freezer, the mechanical parts of the drawer take up space but add to convenience. Each shelf may have a refrigeration coil attached to the under side, and refrigeration coils in the walls and floor of this box. The number of shelves or drawers varies with the manufacturer and with the models.

The upright freezer shown in our picture has four shelves which with the bottom of the box make five compartments. Three sets of inner doors protect

the cold of the shelves from which food is not being removed. Each shelf has a refrigerating coil attached to the under side. Some makes of upright freezers have a separate quick-freeze compartment plus refrigeration in the sides and bottom of the box.

Generally speaking, frost collects faster in an upright freezer. But it is easier to defrost, especially when the shelves are refrigerated. The frost can be scraped to the front of the shelf where it is easily removed. When this type of freezer is closely packed it is impossible to reach over the tops of the food packages in front to remove those in the rear. The hardest place to reach is the back of the bottom shelf. A drawer here instead of a shelf is an advantage.

We try to store only one kind of food on each shelf, thus making it easier to find what is needed. The turnover of the contents of our freezers is so fast that no single item is in a freezer for any length of time. The center compartment in the upright box is very large. Here we place any irregularly shaped packages. In our small schools we use this type freezer for both an ice cream freezer and a frozen food storage cabinet.

Analyze Your Layout

Before you decide on the brand and size of freezer you are going to buy, there are a few points that you should review as they apply to your particular layout. The ideal location, from an operating standpoint, is a cool, dry, well-ventilated place as near as possible to that part of the kitchen where frozen foods will be used. The higher the room temperature in which the box is located the more the motor must run to maintain the freezer operation and the higher the operating cost.

It is poor practice to place the freezer where the temperature falls below 40 degrees because at low temperatures the motor may fail to operate properly. Dampness is not good for any mechanical piece of equipment; it may damage any exposed metal parts and also the motor support, the motor, and springs. In a damp place, moisture may condense on the outer walls of the freezer and even drip enough water to cause pools of water to fall on the floor.

Never place a freezer in a location where it will be enclosed on three sides. Even two-sided enclosure may be poor. Circulation of air is necessary to carry off the heat of the motor operation.

Be sure to consider the strength of the floor, as the freezers are heavy even when empty. An upright freezer requires a stronger floor than a horizontal box of the same capacity because the weight per square foot is greater. If your doors are not standard size, be sure that there is enough clearance for the box to be taken to the spot where it is to be located.

How Much Freezer Space

The amount of freezer space you will want to buy is determined by the use to which the box is to be put. The kinds and quantities of food to be stored and the speed with which they are to be used are also factors. The availability of delivery of frozen foods is important.

Freezers discussed in this article come in three to 30-cubic-foot capacities. Roughly you can store 35 pounds of food per cubic foot. The upright box in the picture is a six-cubic-foot freezer, and holds 210 pounds of frozen food. But if the freezer is filled with many varying sizes of food packages the actual freezer capacity may be as low as 25 pounds per cubic foot. And if a large amount of lightweight food is stored, such as bakery products, the average will be lower, too.

Operating costs vary. To freeze a pound of food and lower its temperature to zero degrees Fahrenheit for storage requires approximately 0.1 kilowatt-hour of electrical energy. Energy for maintaining a six-cubic-foot box at this temperature is 0.35 kilowatt-hour per cubic foot. The cost of electrical power varies across the country, but the average is 3¢ a kilowatt-hour. The cost for operating a freezer as a storage box for frozen foods is lower than when quantities of food are frozen in the box.

The outer walls of the freezer are generally of metal coated with porcelain or synthetic enamel, although a few boxes are made of stainless steel. Liners of the boxes are enamel, aluminum alloy, or aluminum with a nonoxidizing finish.

Adequate insulation is important. The thicker the insulation, the more efficiently the unit operates. The insulation thickness may vary from three to six inches. The sealing of the outside and inside of the box is of great importance. It is necessary to have a seal that will prevent water vapor from passing into the insulation. This point makes the type of door or lid and its seal important.

Doors may be either recessed or flush. A device to hold the door securely when open is an essential safety measure on chest-type boxes having a large lid. Usually these lids are counterbalanced. A tension latch is also necessary on either a lid or a door opening. Some latches must be fastened shut by hand,

For more facts use Inquiry Card. SM-1P

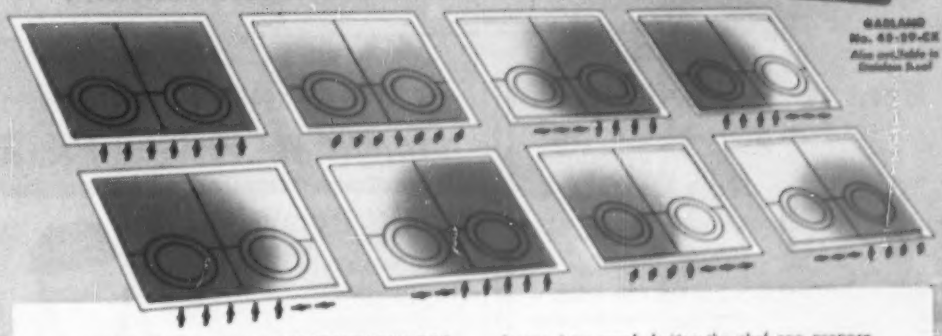
1 * 2 * 3 * 4 * 5 * 6 * 7

Front Fired Burners Give Unequaled Top Heat Flexibility! ONLY

GARLAND

the leader Has This Feature

GARLAND No. 48-29-EX Also available in Stainless Steel



GREATEST FEATURE ON ANY HEAVY DUTY GAS RANGE! *Seven front fired burners* that distribute controlled heat to every part of the cooking top! *Seven front fired burners* that permit an infinite number of heat variations all over the hot top.

Yes, Garland—and *only* Garland—has this great feature! Garland is the most flexible, the most practical of all Heavy Duty gas ranges!

Think of the time saved—think how *much faster*, how *much better* the chef can prepare meals when he has the right degree of heat when he wants it, *where* he wants it.

And remember: this is only one of the many big features that make Garland the leader in sales, the leader in value! So before you buy, see your Garland dealer! Compare! Your choice will be *Garland!*

ALL Garland units are available in Stainless Steel and equipped for use with manufactured, natural or L-P gases.

GARLAND* THE TREND IS TO GAS FOR ALL COMMERCIAL COOKING

Heavy Duty Ranges • Restaurant Ranges • Dinette Ranges • Broilers • Deep Fat Fryers Toasters • Roasting Ovens • Griddles • Counter Griddles

PRODUCTS OF DETROIT-MICHIGAN STOVE CO., DETROIT 31, MICHIGAN

*REG. U. S. PAT. OFF.

Check Product Information, Page 13. Use the Inquiry Card to request further details from advertisers, and about new products

Selection of the Frozen Food Cabinet

(Continued from page 7)

while others catch automatically as the door closes. The hardware needs to be well constructed and should be rust resistant. Good hinges on door and lid are "musts," as is lock built into lid or door.

Some factors of material and workmanship in the construction of the box are entirely dependent upon the word of the manufacturer.

Special features which may interest you when you buy a freezer are: an interior light, which is controlled by the opening and closing of the door or lid; a temperature thermometer; a warning signal either visible or audible or both; insurance of food loss; a control knob to vary the temperature; and toe space at the front edge of the box.

Each additional piece of electrical equipment added to your layout, adds an additional load on the electric circuit to which it is attached. So check with your engineer to be sure you will have adequate power.

It is well to discuss the use you are going to make of your freezer with the dealer from whom you purchase it, as one particular brand may be better suited to your purpose than another. If you are planning to freeze food it is wise also to ask about the operation of the compressor while foods are being frozen. For best results, a freezing unit that runs continuously during the freezing process is preferable. This assures removal of heat from the food continuously until the freezing load is reduced to storage temperature.

With the rapid increase in the use of frozen foods the number of manufacturers making frozen food cabinets has also increased. In buying any piece of equipment it is well to consider first the reliability and reputation of the manufacturer. In any new industry some firms fall by the wayside and others remain for many years. While the actual life of a frozen food freezer has not yet been determined, you do not want to buy a freezer made by a manufacturer who may not be in business five or 10 years hence. The reliability of the dealer is important, too, as he is the person to whom you will turn for a completion of the original guarantee, and for any repairs or replacements of parts as time goes on.

Most manufacturers guarantee free replacement or repair of any part of a freezer that proves defective in material or workmanship for one year after date of installation, and give a five-year guarantee against any defect in the sealed mechanism. Read your agreement carefully and file it away in case of need. This may save you money at a future date. A dealer may offer other special sales inducements such as the use of a loan freezer in case of trouble, or a supply of dry ice for use during a breakdown.

In most school systems summer is the usual time to make new purchases of equipment, remodel layouts, and make any major changes needed in anticipation of the next year's requirements. So this year if you are planning to purchase one or more frozen food cabinets or freezers, see as many different models and makes of freezers as possible. Talk with other people who already have such equipment and learn their experiences. Consult the restaurant people in your community and

...ONE OF THE BEST WAYS TO LOWER OPERATION COSTS—

is to eliminate unnecessary food waste by serving meals that are consistently flavorful. Today hundreds of institutions are depending upon economical Maggi's Granulated Bouillon Cubes to bring new appetizing goodness to their soups, stews, gravies and the many other dishes that call for meat stock. Try adding several tablespoons of this flavor-rich Maggi's Granulated Bouillon to all your everyday recipes—also remember, it makes a delicious instant-quick "broth".

2 OTHER MAGGI FLAVOR FAVORITES

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BRINGS FLAVOR TO BUDGET MENUS!

MAGGI'S *Granulated* **BOUILLON CUBES**

The Nestlé Company, Inc., 155 East 44th St., New York 17, N. Y.

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Master-Keyed P-570

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Only Dudley can supply this unique master key

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Rotating dial combination with rust-proofed 3-tumbler mechanism in stainless steel case. Two year guarantee.

Write for free Catalog Folder that also shows built-in, master-keyed P-340.

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OFFER COMFORT, GOOD LOOKS, DURABILITY, ECONOMY

American Folding Chair No. 44 with plywood seat—Strong: Frame is triangular steel tubing with solid-steel cross braces. Comfortable: Formed hardwood seat of five-ply urea-resin-bonded plywood, 14¼" wide, 15" deep; light-walnut stained, durably lacquered. Formed-steel back panel. Safe: Can't tip forward in use, no snagging, pinching, or falling hazards. Quiet: Folds quickly and quietly; easy to carry and store. Metal parts finished in baked enamel. Replaceable rubber feet.

No. 43—Same durable construction, with formed-steel seat. Suitable also for outdoor use.

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Manufacturers of School, Auditorium, Theatre, Church, Transportation, Stadium Seating, and Folding Chairs

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Model #401

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Monitoring from tape while recording • Less than 0.1% flutter • 50 to 12,500 cycles ± 2 db • Full 50 db signal to noise ratio • High speed forward and reverse — 2500 feet in 60 secs • Instantaneous choice of 7.5" or 15" tape speeds • Handles 5", 7" and 10½" reels (66 minutes) • All controls interlocked to prevent spilling or tearing tape • Write for Bulletin #106.

MODEL #401—Mechanism and electrical chassis ready for console installation. **$295.00** USER'S NET COST

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ask their advice. Their equipment is usually used for more hours a day than that in a school cafeteria, and thus builds up a larger experience record. Then, after securing all possible information, select and buy the model best suited to your needs and budget.

The following books and bulletins contain various types of information, but each has interesting factual material on the different phases of the science of freezing food:

Into the Freezer—and Out. Donald K. Tressler, Clifford F. Evers, and Lucy Long. Avi Publishing Company, Inc. 31 Union Square, New York 3, N. Y. $2.50.

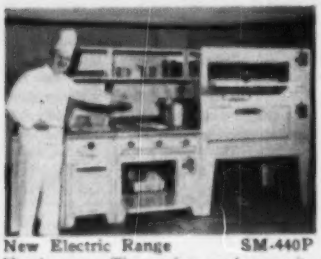
Principles of Food Freezing. Willis A. Gortner, Frederick S. Erdman, and Nancy K. Masterman. Edited by L. A. Maynard. John Wiley & Sons, Inc. 440 Fourth Avenue, New York 16, N. Y. $3.75.

How to Enjoy Better Meals, with Less Work, at Lower Cost with an Electric Farm and Home Freezer. National Electrical Manufacturers Association, 155 East 44 Street, New York 17, N. Y. Free.

Home Freezers, Their Selection and Use. U. S. Department of Agriculture, Misc. Publication No. 687, Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. 10¢.

NEW CAFETERIA EQUIPMENT

Consult SCHOOL MANAGEMENT *Product Information, page 13. Use the postage-free Inquiry Card; indicate key number of item on which you want further details.*



New Electric Range **SM-440P**

Here's news. The surface cookery units on this new Hotpoint range have automatic thermostatic controls. A lighted signal tells when elements are heated to thermostat setting. Single dial for each unit controls heat between 250 and 850 degrees. The oven also has thermostat, signal control. A new-type deck gives oven uniform heat, fast preheating qualities, and rapid change-over from high to low-temperature work.

This equipment has glare and grease proof silver-gray finish. Controls are crimson, with white letters for easy reading. Shown above are the fry kettle, round-the-clock range with storage backshelf, and bake oven banked on top of roasting oven. . . . Use the Inquiry Card or write to Hotpoint, Inc. Dept. SM-440P, 5600 West Taylor St. Chicago 44, Illinois.

Vegetable Dish **SM-445P**

Note the deep, simple lines of this attractive vegetable dish, now a part of the Watertown Lifetime Ware line of Melmac plastic dinnerware. It is practically unbreakable. It may safely be cleaned in automatic dishwashers and sterilized in boiling water. Sand, yellow, gray, blue, and coral are colors in which the dinnerware is available. . . . Use the Inquiry Card or write to Watertown Manufacturing Company, Dept. SM-445P, Watertown, Connecticut.

Food Serving Charts **SM-443P**

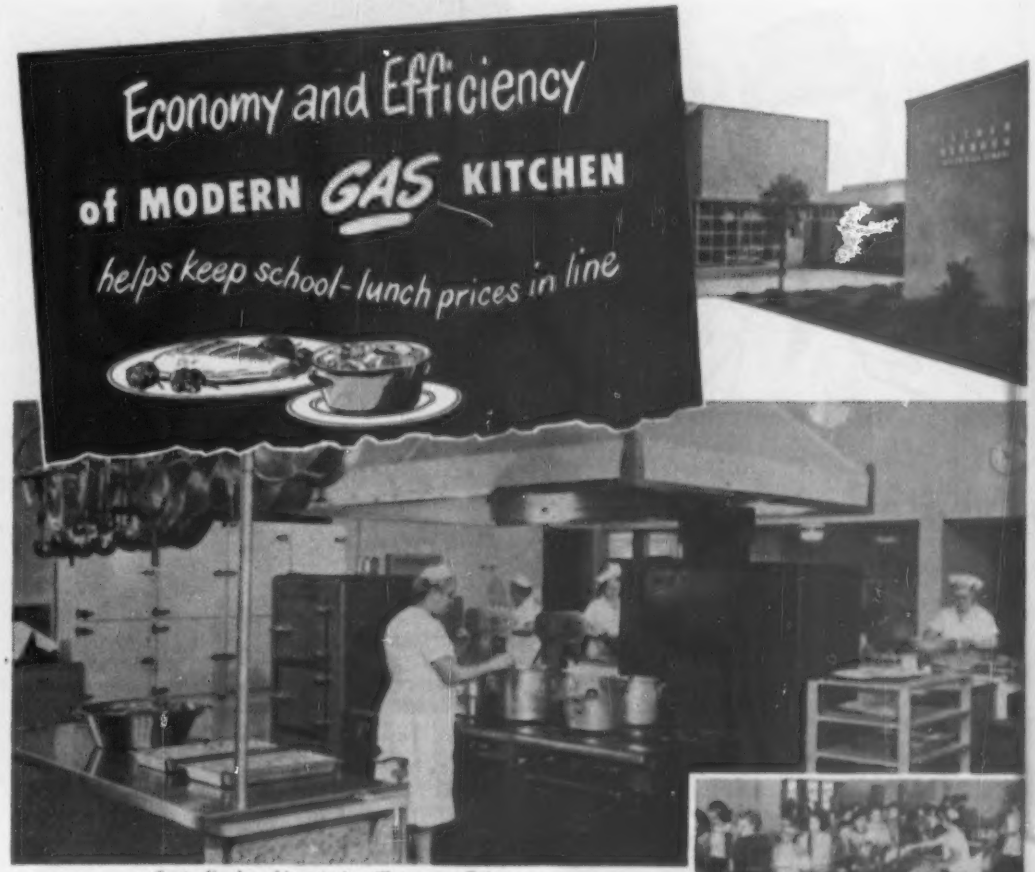
Assistance in determining number of average portions and cost per serving is provided by the charts in this booklet. A short-cut method for figuring food cost percentage is also given. Charts and figures are based on the company's line of fine canned fruits, vegetables, meats, fish and other products. . . . Use the Inquiry Card or write to Reid Murdoch, Division of Consolidated Grocers Corporation, Dept. SM-443P, 325 North La Salle St. Chicago 80, Illinois.

Can Opener **SM-444P**

Here's a strong, foolproof, fast can opener for your cafeteria kitchen. The lifelong Heavy Duty No. 1 opener is all bright plated. Tough cast iron is used for the base, sliding bar, and handle. Knives and gears are of hardened and tempered tool steel. . . . Use the Inquiry Card or write to the Edlund Company, Dept. SM-444P, Burlington, Vermont.

NINE million pounds of frozen turkeys will be donated this year by the U. S. Department of Agriculture to schools taking part in federal lunch programs. Schools lacking deep freeze facilities will not be able to share in the giveaways.

For more facts use Inquiry Card. SM-5F



Centralized cooking station illustrates efficient arrangement of modern GAS Cooking Equipment

Service Area

Cafeteria Dining Hall

1100 CUSTOMERS per hour, for one hour each day—that's the kind of volume food-service which tests both cooking equipment and cooking fuel. At Luther Burbank Junior High School, Burbank, California, efficient GAS and modern Gas Cooking Tools have passed roster for economy and service.

Cafeteria Supervisor Kathryn Waggoner expresses it this way,

"No other fuel will give us the dependability, the perfect control of heat, the over-all top service, and not to be mentioned last, the economy. This allows us to deliver a well-cooked, nutritious meal to the students at a price they can afford."

That record of efficient and economical volume food preparation and service is accomplished with minimum equipment—2½ sections heavy duty range, 1 bake oven with 4 decks, 1 steamer, plus 1 water-heater—all modern Gas-fired Units. Furthermore, the task is accomplished at a saving of approximately $70.00 per month over the cost of cooking by another cooking heat source.

Add together the savings in initial cost of equipment, and the monthly cost of fuel, and it's quite evident that GAS is the most economical cooking fuel. Your Gas Company Representative will show you why GAS is the most desirable fuel for volume food preparation.

MORE AND MORE... THE TREND IS TO GAS

AMERICAN GAS ASSOCIATION

420 LEXINGTON AVENUE, NEW YORK 17, N.Y.

NEW AUDIO-VISUAL EQUIPMENT

Consult SCHOOL MANAGEMENT Product Information, page 13. Use the postage-free Inquiry Card; indicate key number of item on which you want further details.

Demonstration Projector SM-456P
Teachers can simultaneously illustrate and interpret material for their grade through high-school students with use of the Scribe Visualizer. It can be used for projecting prepared copy and illustrations along with on-the-spot drawings and notations made by a teacher facing her class. Images are projected on a 30 x 37½-inch screen which comes with the unit; other size screens are available. Since the images are sharp and clear there is no need for having the room darkened.

This stereopticon device works by projecting on the screen whatever appears on a film negative, called a Preprint, which is placed on an 8 x 10 writing surface. The Preprint—prepared from photographs, drawings, maps, tables, or other copy—is inserted under a movable roll of transparent tape which the teacher uses as a writing surface. The writing and Preprint are then projected together. . . . Use the Inquiry Card or write to Visualizer Company, Dept. SM-456P, 170 South Beverly Dr. Beverly Hills, California.

Three-Speed Phonograph SM-453P
Your school can make good use of the new Recitalist, a portable, 3-speed phonograph that features the Polyphonic Selector. This instrument carefully balances the response characteristics of amplifier, speaker, and speaker enclosure, and maintains tonal balance and equalization for each recording.

The Recitalist plays at speeds of 78, 45, and 33-1/3 r.p.m. and accommodates records up to 16 inches. It has an auditorium type, 8-inch, Alnico V permanent magnet speaker.

In addition, a microphone input and radio input increase the flexibility of this instrument, which can also be used as a public address system. . . . Use the Inquiry Card or write to Rek-O-Kut Company, Inc. Dept. SM-453P, 38-13 Queens Blvd. Long Island City, New York.

New Lens SM-450P
Classroom films can be projected with extreme sharpness and contrast to the very corners of the screen with the Super Proval lens. It contains a new "field corrector" element. In its manufacture, the lens is held to an accuracy of about 55/1,000,000ths of an inch. It is actually of camera-lens quality. This lens is standard on new Bell & Howell projectors and is available as an accessory for the company's projectors now in the field. . . . Use the Inquiry Card or write to Bell & Howell Company, Dept. SM-450P, 7100 McCormick Rd. Chicago 45, Illinois.

For more facts use Inquiry Card. SM-6P

Kys-ite is Youth Proof!

KYS-ITE, the *different* kind of plastic, is so strong and light, it's even youth-proof! Practically unbreakable, won't shatter, tough to chip or crack! A prime kitchen favorite, too. Never clashes or clatters. And so easy to handle and keep clean. Boiling water or ordinary dish washing compounds won't mar or fade its colorful beauty because that color is the plastic itself . . . not merely a surface finish.

Stretch your budget with KYS-ITE, the tableware that "can take it." There's KYS-ITE Tableware . . . KYS-ITE round or rectangular Serving Trays. And the famous Keyes "Meal-in-One" Plate—the 3-partition plate that holds a meal plus beverage—so light a child carries it easily. See your dealer for samples and prices.

KYS-ITE Plastic Tableware and Serving Trays

KEYES

KEYES FIBRE COMPANY, Dept. N-7,
420 Lexington Ave., New York 17, N. Y.

Please send us information on
KYS-ITE Tableware ☐ KYS-ITE Trays ☐

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QUICKLY FOLDS OR UNFOLDS for changing ROOM USES

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MORE seating capacity
MORE leg comfort
MORE exclusive features
MORE strength and rigidity
MORE for your money

Churches, schools, hotels, institutions, fraternal buildings. Convert any room into a banquet or group activity room. Clear it in minutes.

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THE STRONGEST, HANDIEST FOLDING TABLE MADE!

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Maximum protection for your grounds and property is assured when Realock Fence stands guard against trespassing, vandalism and other hazards. Realock Fence gives you *tamper-proof protection*—that's because essential fittings are designed to permit the removal of bolts from the inside only.

Stoutly constructed of steel wire, heavily galvanized, Realock Fence is weather-resistant, extra durable and practically maintenance-free. Furnished without barbed wire, if desired. Write for free estimate.

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FREE Catalog BRONZE TABLETS

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For more facts use Inquiry Card. SM-10P

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Due to recent expansion, we are in a position to accept a few more exclusive franchises on school equipment. We believe we could give profitable representation to a few good lines. Write

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CHECK LIST OF NEW AUDIO-VISUAL AIDS

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16-mm. Educational Films

Prices subject to change without notice. Where films are sent free, except for transportation charges, the word "loan" is used.

A scene from the Remington Rand film on advantages of using electric typewriters

SM-300P—Keys to Electri-conomy. 27 min. Loan. Apply to any Remington Rand branch office or to Visual Aids Dept. Remington Rand, Inc. Dept. SM-300P, 315 Fourth Ave. New York 10, New York.

Plot and characterization show the advantages of electric typing over manual typing. The story concerns the savings, in both money and time, made by a business firm when it finally decides to convert to electric typewriters. The change results in the production of quantity carbon copies, perfect stencil cutting, and production increases up to 50 percent. Suitable for typing classes.

SM-305P—Mt. Rushmore National Shrine. 3½ min. Sale—$14.75 for 16-mm. silent, color; $7.50 for 8-mm. silent, color. World in Color Productions, Dept. SM-305P, 108 West Church St. Elmira, New York

Complete coverage of this shrine in South Dakota. Carries explanatory subtitles.

SM-302P—New Fields in the Old Dominion. 2 reels. Sale—$140, color; $70, black and white. Film Production Service, Dept. SM-302P, State Board of Education, Richmond 16, Virginia.

Shows and explains farming in modern Virginia. Surveys the changes that have come in agricultural products over the years. Presents the seven farm products—poultry, dairying, tobacco, beef cattle, truck crops, fruit, and peanuts—which make agriculture the state's leading industry.

SM-333P—Challenge: Science Against Cancer. 30 min. Sale—$45. Rental—available from film libraries. Supplementary filmstrip—$2. Medical Film Institute, Dept. SM-333P, 2 East 103 St. New York, New York.

This film is the joint project of the health agencies of the United States and Canadian governments. It answers the need for widespread information on this subject by describing the ceaseless efforts of scientists all over the world to conquer a dread enemy of mankind. Suitable for all high-school, college, and adult groups, it is also designed to arouse the interest of young people in scientific careers.

SM-309P—How a Watch Works. 18 min. Color. Loan. Association Films, Inc. Dept. SM-309P, 347 Madison Ave. New York 17, New York.

The complex basic design and operation of a watch are demonstrated in simple fashion. A huge 7½ foot watch is assembled and disassembled to show the inside works in every detail.

Filmstrips

NEW York Times, Office of Educational Activities, Dept. SM-P, Times Square, New York 18, New York, has added three more titles to its 1949-50 series of filmstrips on current events for upper elementary through senior high-school classes. Sale—$2 each. Guides included.

The Defense of the United States. 53 frames. A survey of current plans for defense against attack by Russia. SM-355P.

Farmers and Prices. 53 frames. A study of the problem of how to keep farm prices up without making the cost of food too high. SM-356P.

Half Century of Turmoil. 62 frames. A review of events of world importance in the last 50 years. SM-357P.

SM-354P—School Building 1950. 130 frames. Discussion guide. Sale—$5. American Association of School Administrators, NEA, Dept. SM-354P, 1201 Sixteenth St. N.W. Washington 6, D.C.

A pictorial record of the school building architectural exhibit displayed at the recent AASA convention at Atlantic City. The filmstrip will be of great value to summer school workshops on school buildings, to administrators planning new school buildings, and to teachers and laymen seeking ideas on functional school building.

For more facts use Inquiry card. SM-11P

"SAFWALK" BLEACHERS

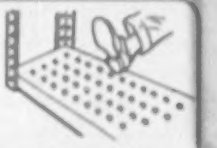
Now, even small schools can provide modern seating space for games, graduation exercises and other school events. Low-cost SAFWALK Bleachers bring permanent seating facilities within the range of small school budgets.

Also big colleges and universities find that SAFWALK Bleachers hold up firmly under capacity crowds. The "bridge-type" sturdy steel construction assures a safe, durable, fire-proof structure that gives dependable service year after year. Won't rot. Low maintenance.

Write for FREE Catalog . . . NOW!

Mail the coupon at the right for your free catalog of SAFWALK structures and price lists. There's absolutely no obligation to buy.

"BUILT-IN" Safety Features



On every step . . . on every walkway, "built-in" safety helps prevent accidents under crowded conditions and during inclement weather. Burred holes punched from bottom provide a safe, non-skid surface, even when icy . . .

SAFWALK Bleachers go up fast and easy without special tools or skill. Can be taken down and moved. Size can be increased or decreased. SAFWALK material available for fire-escapes, loading racks, and walkways.

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presenting the claims made for them by their manufacturers

Consult the Product Information Page opposite. Send the Inquiry Card for further information. No charge, no obligation.

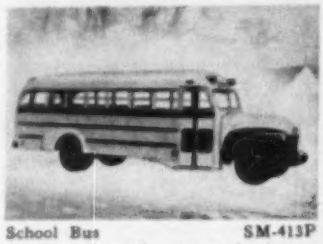
Folding Table **SM-430P**
Designed for years of hard institutional use is the ¼-inch tempered Midtex hardboard top on this new folding table. It provides a smooth, sanitary surface in blond or brown finish. The automatic folding legs lock in place. When folded for stacking, they lie flush against the bottom of the table within the boxed apron construction. Legs are recessed and cannot interfere with seating. Various table widths and lengths are available. . . . Use the Inquiry Card or write to Midwest Folding Products, Dept. SM-430P, 1844 West 14 St. Chicago 8, Ill.

Book Covers **SM-401P**
Transparent Book Savers serve as tough, waterproof, tear-resistant covers for school and library books. They are easy to put on and fit skin tight regardless of book size. Composition is of long-wearing Pliofilm, a material impervious to liquids and cleanable with soap and water. Covers are available in sets of three. . . . Use the Inquiry Card or write to the Saver Company, Dept. SM-401P, Washington, D. C.

Schedule Maker **SM-423P**
Speedy and easy scheduling of classes is possible with the Reiste Schedule Maker, developed by a superintendent. It helps principals to determine actual number of conflicts, avoid as many as possible, and have the schedule arranged before the opening of school. With its use, the number and identity of pupils in any one class are easily determined.

The unit consists of a numbered card for each student, each number representing a class in the curriculum. A movable metal clip is attached to the card beside the number of each class the student plans to take. When cards are stacked evenly in a tray, each row of clips represents a class. Possible conflicts are located by raising the cards of each class in succession. One card may be used for a student through four years of high school. A set includes 200 cards; extra cards are available. . . . Use the Inquiry Card or write to Lusk Herald, Dept. SM-423P, Lusk, Wyo.

Air Sanitizer **SM-411P**
An effective air sanitizer that will banish practically any odor and at the same time kill a high percentage of air-borne germs is called Ozium. Its formula includes both propylene glycol and triethylene glycol. The ingenious chrome-plated dispenser is fully guaranteed. . . . Use the Inquiry Card or write to Woodlets, Inc. Dept. SM-411P, Portland, Pa.



School Bus **SM-413P**
Regular, safe pupil transportation is provided by the Pioneer, one of the 1950 Superior models. This all-steel coach has an all-welded Unistructure frame. Better visibility than formerly is gained by the use of additional glass in the windshield and entrance door. A more adjustable, form-fitting driver's seat and conveniently located controls further boost driving safety.

Another feature of the bus is the new U-flanged wrap-around rear bumper designed to withstand great impact. Heavily padded passenger seats have attractive, durable, two-tone plastic covers. . . . Use the Inquiry Card or write to Superior Coach Corporation, Dept. SM-413P, Lima, Ohio.

Air Distribution Units **SM-404P**
For ventilating and air conditioning systems in schools, Venturi-Flo ceiling outlets provide efficient air distribution. These attractive, versatile units come in a wide range of sizes. Model J is a supply outlet in which air deflection is adjustable from vertical to horizontal. It mixes room and supply air for rapid temperature equalization and noiseless, draftless air distribution. Model JC is a combination supply and exhaust unit. . . . Use the Inquiry Card or write to

(Turn to page 14)

For more facts use Inquiry Card. SM-13P

THE Endur SYSTEM

ALL THE PAINT PRODUCTS NECESSARY FOR INTERIOR DECORATION OF BRIGHTNESS-BALANCED CLASSROOMS

When used as indicated on the ENDUR SYSTEM COLOR CHART, ENDUR SYSTEM products furnish scientifically correct light reflectance values within the 3:1 helios ratio range.

FOR WALLS, CEILINGS, WOODWORK, FLOORS and CHALKBOARDS

Ask your school supply dealer for literature and handy ENDUR SYSTEM COLOR CHART (shows colors—gives reflectance values and recommended uses).

Endur "500" SERIES WALL, CEILING, WOODWORK and DADO PAINT
THE REFLECTANCE VALUE IS ON THE LABEL

Assures correct light reflectance values when used according to Endur System Color Chart. Emulsified rubber base paint retains proper reflectance despite repeated washings. Self-priming — self-leveling — odor-free — 20 minute drying — one coat coverage. 14 colors and white. Gallon covers 400-500 sq. ft. Material cost — about 1¢ per sq. ft.

Endur "300" SERIES NON-SLIP* FLOOR PAINT FOR WOOD or CONCRETE

Special rubber base resists wear, water, oils, greases, acids, alkalis, and chemicals in concrete. Ideal for shower and locker room floors, hallways, etc. *Contains minute abrasive particles of silicon carbide ("Carborundum") and aluminum oxide uniformly suspended throughout the paint. These help bond paint to floor — make long-wearing, virtually slip-proof surfaces.

Endur "200" SERIES GREEN CHALKBOARD RESURFACER

For old, worn slate or composition chalkboards — Completely new surfaces in smooth, durable, scientifically approved green. Easily applied by brush or spray gun. Material cost — only 3¢ per sq. ft. In standard 2-24 Green or special 2-20 Green (for maximum contrast between board and chalk). Ask about ENDUR CHALKBOARDS for new school construction.

ENDUR PAINT COMPANY
DEPT. 17, 46 CORNHILL • BOSTON 8, MASS.

For more facts use Inquiry Card. SM-13P

THEATRICAL FABRICS by DAZIAN'S INC.
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WRITE FOR FREE BOOKLET "WHAT FABRICS CAN DO FOR YOUR SHOW"

PRODUCT INFORMATION PAGE

Use the Inquiry Card to obtain

FURTHER DETAILS

about products mentioned in advertisements or described in check lists in this issue. No charge and no obligation for this service

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NEW SCHOOL EQUIPMENT

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450P—Bell & Howell lens
419P—Breuer floor machine
428P—Certain-teed wallboard
403P—Curtis luminaire
409P—Dremel sander
407P—F. W. Dwyer air filter gage
444P—Edlund can opener
405P—Ekco pressure cooker
422P—Endur paint
412P—Flamort chemical
440P—Hotpoint range
423P—Lusk Herald schedule maker
430P—Midwest folding table
402P—Owens-Illinois Glass firedoor
443P—Reid Murdoch food serving charts
453P—Rek-O-Kut phonograph
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NEW AUDIO—VISUAL AIDS

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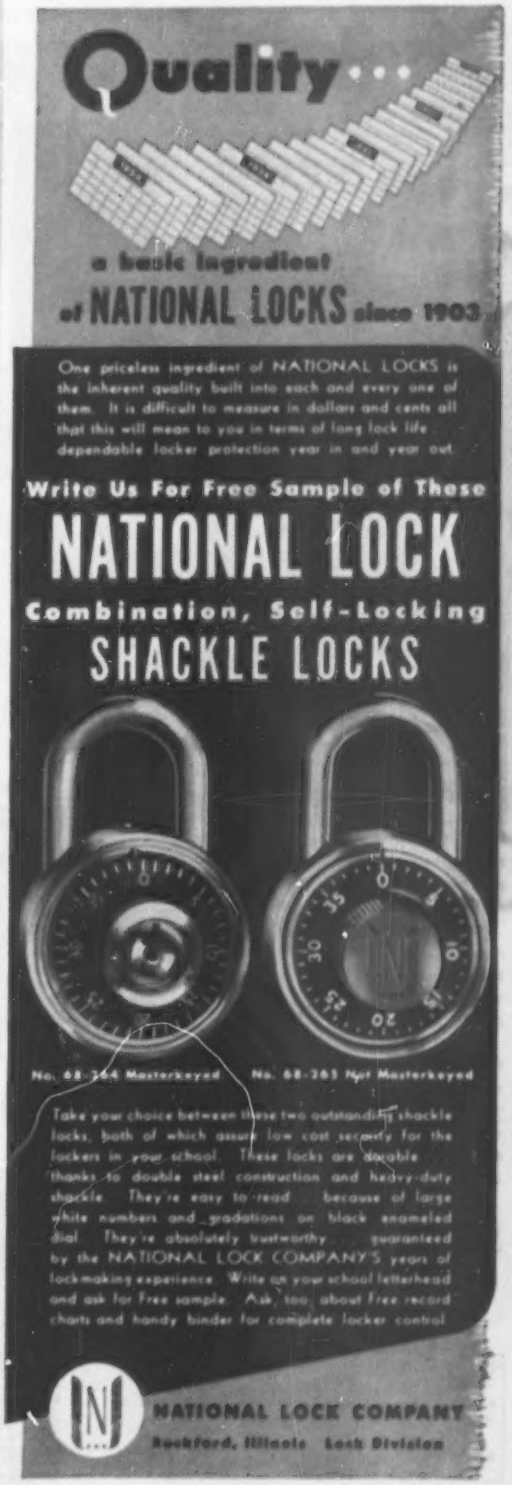
DIRECTORY ISSUE

The SCHOOL MANAGEMENT directory gives you an over-all listing of manufacturers and distributors of school supplies and equipment. Watch for it! It will be an important section of our August issue. You will use it in August and you will use it whenever you order equipment and supplies during the year.

For more facts use Inquiry Card. SM-14P



Barber-Colman Company, Dept. SM-404P, Rockford, Illinois.

Floor Resurfacer **SM-426P**
Patching or overlaying of concrete, brick, asphalt, wood, or composition floors can be done with Stonhard Resurfacer. It makes a smooth, tough, resilient, non-skid, spark-resistant surface that withstands heavy trucking and assures a safe comfortable footing. It can be applied by your own maintenance men. . . . Use the Inquiry Card or write to Stonhard Company, Dept. SM-426P, 1306 Spring Garden Street, Philadelphia 23, Pennsylvania.

Check List of SCHOOL SUPPLIES AND EQUIPMENT

(Continued from page 12)

Consult SCHOOL MANAGEMENT Product Information, page 13. Use the postage-free Inquiry Card; indicate key number of item on which you want further details.

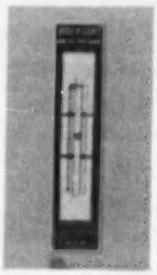
New Luminaire **SM-403P**
Here's an indirect, incandescent luminaire that is both efficient and decorative.

Called the Sno-Flake, it has a pleasing geometric pattern that blends with any decorative scheme. It utilizes either a 300 or 500-watt silvered bowl lamp. Louver is of one-piece die-cast aluminum. Since it is open top and bottom it requires a minimum of maintenance. . . . Use the Inquiry Card or write to Curtis Lighting, Inc. Dept. SM-403P, 6135 West 65 St. Chicago 38, Illinois.

Interior Paint **SM-422P**
To help you achieve brightness-balanced classrooms, Endur "500" Series paint has the correct reflectance value on each label. It is available in white and 14 pastel colors. When used as recommended on the Endur System Color Chart, proper correlation of color schemes and light reflectances for modern classrooms is obtained. This emulsified rubber-base paint is formulated to produce an easily applied, smooth, flat, washable finish on walls, ceilings, and woodwork. . . . Use the Inquiry Card or write to Endur Paint Company, Dept. SM-422P, 46 Cornhill, Boston 8, Massachusetts.

Fire-Retardant Chemical **SM-412P**
Schools can spray draperies, upholstery, rugs, walls, fiberboard partitions, and wood with Flamort fire-retardants to make them flame-resistant. The treatment is excellent for new construction, since wood can only be treated before it is painted. It is claimed that in cases of flames or heat in excess of 1,000 degrees F., Flamortized articles will be charred only at the point of attack of the flame and no blaze will appear at all. . . . Use the Inquiry Card or write to Flamort Chemical Company, Dept. SM-412P, 746 Natoma St. San Francisco 3, California.

Air Filter Gage **SM-407P**
For quickly determining the condition of filters in forced air heating plants, window ventilators, air conditioning units, and package air conditioners, try installing the Visi-Float air filter gage. It is designed for mounting on the outside of the furnace, with a plastic tube descending into the blower chamber through the filter or filter frame. A float rises in the transparent gage glass to indicate that filters need renewing or cleaning. Molded Lucite gage comes with all parts necessary for easy installation. . . . Use the Inquiry Card or write to F. W. Dwyer Manufacturing Company, Dept. SM-407P, 317 South Western Ave. Chicago 12, Illinois.



Safety Pressure Cooker **SM-405P**
The safety aspects of the Ekconomic low-pressure cooker-sterilizer—for which it won the 1950 Lewis & Conger safety award grand prize—will be of interest to home economics departments. It can be used at a low pressure of 3¼ pounds

For more facts use Inquiry Card. SM-15P

Copperweld* Chain Link Fence is the protective fence that protects itself. It *never* needs a drop of paint—no maintenance costs to worry about. There's no other fence like it. It is made of Copperweld Wire—with a thick, durable copper covering inseparably "Molten-Welded" to a strong steel core.

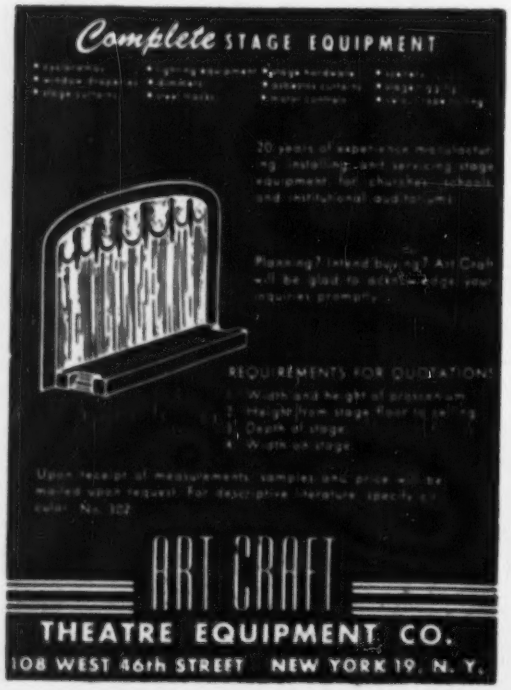
Because of its unique construction, Copperweld Fence is rust-proof, corrosion-proof. It provides long lasting property protection regardless of atmospheric conditions. It stays strong and in alignment. It costs less because it lasts longer.

Write today for a sample of Copperweld Fence and a copy of our new catalog—free on request.

*Trade Mark

COPPERWELD STEEL COMPANY
1035 Monongahela Ave., Glassport, Pa

For more facts use Inquiry Card. SM-16P



For more facts use Inquiry Card. SM-17P

Fuller Fiber Brooms Give You Three Times the Mileage

The true value of a broom is measured by much more than first cost alone. For example, a Fuller Fiber Broom outwears ordinary brooms 3 to 1. *You get three times the mileage.* We invite you to compare the wearing qualities of the Fuller Fiber Broom with any other broom under any sweeping conditions. We believe a test will convince you that, dollar for dollar, Fuller is your best buy. Prove it to yourself. Call your Fuller Industrial Representative today.

INDUSTRIAL DIVISION
The FULLER BRUSH Co.
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In Canada: Fuller Brush Co., Ltd., Hamilton, Ont.

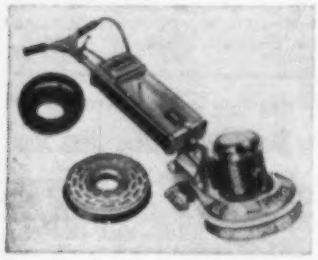
SCHOOL SUPPLIES AND EQUIPMENT

Consult SCHOOL MANAGEMENT *Product Information, page 13. Use the postage-free Inquiry Card; indicate key number of item on which you want further details.*

for more than 80 percent of the foods usually prepared in pressure cookers. This safety feature also helps preserve food values.

An interlocking handle safety device prevents opening of the cooker when there is more than ½ pound pressure inside. There is a foolproof valve for pre-setting cooking pressure at 3¾, 10, or 15 pounds. . . . Use the Inquiry Card or write to Ekco Products Company, Dept. SM-405P, 1949 North Cicero Ave. Chicago, Illinois.

Sander-Polisher **SM-409P**
School shop and industrial arts departments will want to take notice of the new Model 2000 electric sander-polisher. It delivers 14,400 sanding strokes per minute, using a straight-line, reciprocal action principle which the maker claims will prevent burning, scratching, or marring of sanded surfaces. Five-pound machine has only two moving parts, oilless bearings. The cam-type paper holder enables rapid abrasive changing. An all-metal, handle-attached storage cabinet, 8-foot cord, 25 sheets of abrasive paper, and sheepskin polishing pad come with the sander. . . . Use the Inquiry Card or write to Dremel Manufacturing Company, Dept. SM-409P, Racine, Wis.



Floor Machine **SM-419P**
You can use the Tornado all-purpose floor machine for scrubbing, waxing, polishing, sanding, steel wooling, and pumicing all types of floors. It is particularly convenient to run because it incorporates 7 practical and helpful features: a rotary safety-grip switch, fully adjustable handle, self-raising wheels, fingertip solution control, automatic brush coupler, "Foam-Feed" brush design, and quick-change snap-on replaceable brush rings. Rugged machine has a sturdy Underwriters' Laboratories approved motor. . . . Use the Inquiry Card or write to Breuer Electric Manufacturing Co., Dept. SM-419P, 5100 Ravenswood Ave. Chicago 40, Ill.

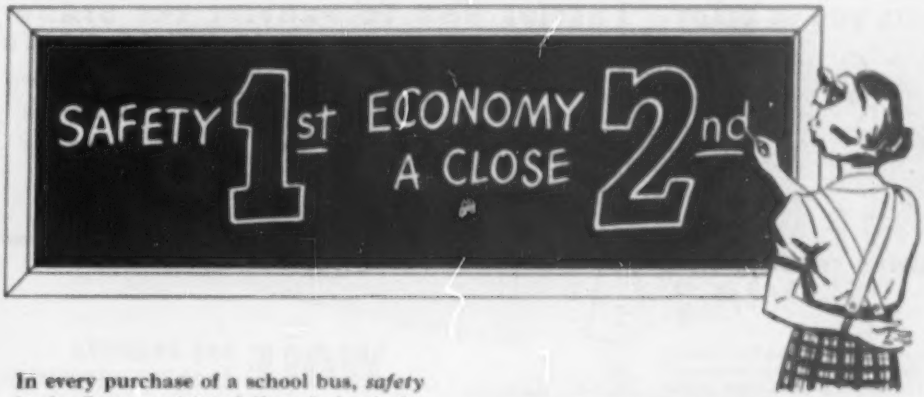
Fire-resistant Wallboard **SM-428P**
Builders can meet strict code requirements for fire-resistant construction when they use Firestop Bestwall. A single ⅝-inch thick layer of this gypsum wallboard, applied on both sides of a load-bearing wood stud partition, has a fire-resistance rating of 1 hour. A single layer of ½ inch thickness on similar construction has a 45-minute rating. This strong, rigid, dimensionally stable board can be used in new construction or remodeling for interior walls or partitions, bearing or non-bearing. It carries the Underwriters' Laboratories seal. . . . Use the Inquiry Card or write to Certain-teed Products Corporation, Dept. SM-428P, 120 East Lancaster Ave. Ardmore, Pennsylvania.

New Firedoor **SM-402P**
Excellent for schools is the Kaylo firedoor with an Underwriters' Laboratories one-hour rating. It looks like a conventional, standard-size, flush-type wood door and weighs only 90 pounds. Its fire resistance is provided by a core of lightweight inorganic insulation, Kaylo. The wood veneer bonded to the core makes a unit that does not shrink or swell, and is resistant to moisture, rot, and termites.

Door can support an 8,000 pound distributed load on a 3-foot span with only a ¼-inch deflection, and is not distorted when the load is eliminated. . . . Use the Inquiry Card or write to Owens-Illinois Glass Company, Dept. SM-402P, Ohio Bldg. Toledo 1, Ohio.

COST of Catholic education is estimated at $200,000,000 a year with 60,000 nuns teaching 2,000,000 elementary pupils; and 25,000 nuns and mothers teaching 475,000 high-school pupils.

For more facts use Inquiry Card. SM-18P



In every purchase of a school bus, *safety* is the first requisite, followed closely by *economy*—two qualities that reach top development in the Chevrolet Advance-Design chassis for school buses. Here is safety that goes beyond mere strength and ruggedness . . . it's the extra safety that comes with positive braking, ease of control, and reserve power. And Chevrolet's traditional economy works three ways—in low first cost, low operating costs, low maintenance costs. Choose Chevrolet for safety and savings.

CHEVROLET School Bus Chassis

CHEVROLET MOTOR DIVISION, *General Motors Corporation*, DETROIT 2, MICHIGAN

NEW CHEVROLET ADVANCE-DESIGN

SCHOOL BUS CHASSIS

199-INCH WHEELBASE SCHOOL BUS CHASSIS

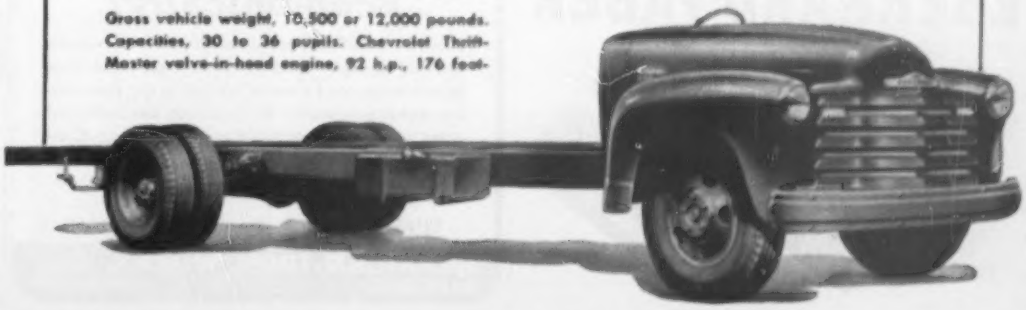
Gross vehicle weight, 13,500 or 15,000 pounds depending on fire equipment. Capacities, 42 to 54 pupils. Chevrolet Load-Master valve-in-head engine, 105 h.p., 193 foot-pounds torque (pulling power) at speeds under 35 m.p.h. governed speed.

161-INCH WHEELBASE SCHOOL BUS CHASSIS

Gross vehicle weight, 10,500 or 12,000 pounds. Capacities, 30 to 36 pupils. Chevrolet Thrift-Master valve-in-head engine, 92 h.p., 176 foot-pounds torque (pulling power) under 35 m.p.h. governed speed.

137-INCH JUNIOR SCHOOL BUS CHASSIS

Gross vehicle weight, 7600 pounds. Chevrolet Thrift-Master valve-in-head engine, 92 h.p., 176 foot-pounds torque (pulling power) under 35 m.p.h. Capacity, 16 pupils.



MANUFACTURERS' LITERATURE

Consult SCHOOL MANAGEMENT Product Information, page 13. Use the postage-free Inquiry Card; indicate key number of item on which you want further details.

Hobby Tools **SM-465P**
Catalog describes the handgrinders, flexible-shaft tools, duplicator for wood and plastic carving, and attachments included in this company's line and presents project ideas. . . . Use the Inquiry Card or write to the Dumore Company, Dept. 465P, Racine, Wisconsin.

Maintenance Trestle **SM-466P**
"Maintenance Trestle Gets You Up in the World Faster . . . Easier . . . Safer . . ." is a well-illustrated catalog which describes the many height and length variations possible with versatile tubular steel trestles, and shows them in school uses. . . . Use the Inquiry Card or write to Bil-Jax, Inc. Dept. SM-466P, Archbold, Ohio.

Resurfacing Floors **SM-472P**
The folder "Service Floors for Industries and Institutions" describes four general types of materials for renewing old floors and outlines the conditions under which each type should be used. . . Use the Inquiry Card or write to United Laboratories, Inc. Dept. SM-472P, 16801 Euclid Ave. Cleveland 12, Ohio.

Wood Frame Construction **SM-474P**
Impressive booklet titled "School Buildings Your Tax Dollars *Can* Afford" gives safe, economical, durable one-story school buildings of wood frame construction as the answer to the challenge of school housing needs. Its factual, nontechnical, pictorial approach will help administrators and local groups to see what is being done in other communities. Problems of fire, earthquake, and wind resistance are dealt with. Three systems of timber construction and typical truss designs are explained. . . Use the Inquiry Card or write to Timber Engineering Company, Dept. SM-474P, 1319 Eighteenth St. N. W. Washington 6, D. C.

Use of Color **SM-470P**
A large-size color booklet titled "Du Pont Color Conditioning" describes a painting plan which has resulted from research into the psychological factors of color and brightness, and concern over the results of their use. Examples are shown of the proper use of color in school classrooms, shop, and auditorium, where Color Conditioning provides visual comfort and emotional relaxation. . . Use the Inquiry Card or write to E. I. du Pont de Nemours & Company (Inc.), Finishes Division, Dept. SM-470P, Wilmington 98, Delaware.

Dishwashers **SM-467P**
Catalog titled "Commercial Type Universal Dishwashers" shows the company's new line of dishwashers, scrappers, glass washers, and combination dish, glass, and silver washers, and describes the efficient Swing-Wash action available in a number of the models. . . Use the Inquiry Card or write to Universal Dishwashing Machinery Company, Dept. SM-467P, 39 Windsor Place, Nutley, New Jersey.

Piano Teaching **SM-469P**
"It's Fun. . . It's Easy to Play the Piano the New Way" is a leaflet which describes the benefits to children from new class piano teaching methods, and is intended for distribution to parents of children who may be interested in music instruction. . . Use the Inquiry Card or write to American Music Conference, Dept. SM-469P, 332 South Michigan Ave. Chicago 4, Illinois.

For more facts use Inquiry Card. SM-19P

WILL YOU BE READY

WHEN THEY *Return?*

In making your selection for kitchen or cafeteria equipment, your consideration of the factors of SANITATION, ECONOMY, efficiency, and speed, such as featured in the Wolf Stainless Steel line of gas operated cooking equipment, are of the utmost importance. Then too, the beauty and versatility of the various sectional units, which inter-member to provide you with a battery offering every cooking requirement, enables you to fit Wolf equipment into any plan readily and with the least expense.

DECIDE NOW TO PROVIDE THE UTMOST IN COOKING FACILITIES WHICH OFFER

- Sanitation
- Efficiency
- Economy

WOLF GAS OPERATED COOKING EQUIPMENT

Scientifically designed to meet your every cooking requirement. From a single hot plate to a complete battery, the Wolf Stainless Steel Sectional Units provide the ideal cooking requirements for schools and other institutions, for sanitation, efficiency and economy are the dominant requirements. Notwithstanding the superior features of these versatile Wolf units, you will be able to install this stainless steel equipment at a price comparable with ordinary black finished ranges.

WOLF EQUIPMENT IS OFFERED THRU YOUR SUPPLY HOUSE. WRITE FOR INFORMATION.

WRITE TODAY for Catalog

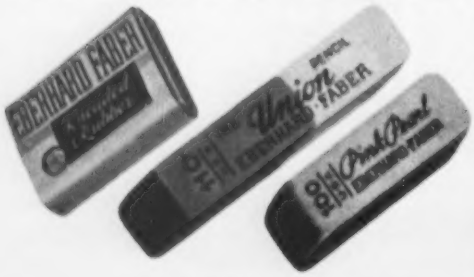
WOLF RANGE & MFG. CO.
3731 SO. ALAMEDA ST. LOS ANGELES 58, CALIFORNIA

For more facts use Inquiry Card. SM-20P

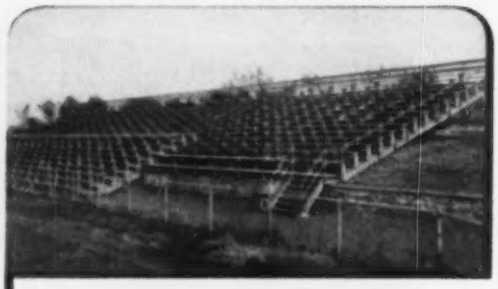
School-born habits are lifelong

For the sake of student discipline and school budget alike, instill the habit of Clean Corrections with

ERASERS by EBERHARD FABER



For more facts use Inquiry Card. SM-21P



NOW YOU CAN ADD SEATING CAPACITY *Economically!*

Plan new additional grandstands with factory-built, low-cost Kerrigan Steel Sections. These permanent grandstands can be easily erected to fit your existing stands (see photo). Many schools have effected great savings by erecting Kerrigan Sections themselves. For complete information,

Write for Catalog 13-E today

Weldforged GRANDSTAND DIVISION, DEPT. 6

KERRIGAN IRON WORKS, Inc.
NASHVILLE TENNESSEE

For more facts use Inquiry Card. SM-22P

Door Signs - Name Plates - Desk Signs

Any Wording. Any Name. One, several or many. DeLuxe Lifetime Engraved Plastic. Write for free circulars, sample.

HULL SIGN CO.
West Winfield 1, N.Y.

- PRINCIPALS
- SUPERINTENDENTS
- GUIDANCE DIRECTORS

Are you ever in a quandary when asked to recommend a boarding school or junior college for one of your students? Do you wonder which school will best meet the specific needs of this boy or girl?

The staff of the School Bureau of Parents' Magazine has visited all types of schools throughout the country. This first hand knowledge which enables us to select schools to meet individual requirements, is available to you.

Write us fully, giving all pertinent information. We will recommend schools and have catalogs sent to you. Or, if you prefer, have the parents write to us direct.

School Bureau
Parents' Magazine
52 Vanderbilt Ave.
New York 17, New York

Light Years Ahead

(*Continued from page 5*)

aspects. From parents, Mrs. Moyes found that: the proposed plan was acceptable; they liked the parking space provided; they liked very much the plans for lavatories adjacent to the classrooms, "felt this would cut down many behavior problems with children"; and they wanted to be sure of a covered passage between all buildings.

Staff personnel, Mrs. Moyes found, liked the general plan and would prefer not cutting it in any respect; they particularly liked the lavatories adjacent to the classroom, the work area outside, the cafeteria and teachers' lounge and workroom; the custodian was pleased with ample storage area; the teachers believed that the larger classrooms with flexible furniture would provide enough room to take care of rhythm activities which previously were handled in the auditorium.

Plan Well Accepted

So, after creating acceptance from all sides, the plan was approved and the anxious period of construction was started. Many difficulties, mainly stemming from shortages of that time, were encountered, but the buildings were occupied in September 1948.

The plan for Warren Lane school includes seven classroom buildings, each housing two classrooms; a kindergarten building, with two classrooms and a block room between; and an administration building, with two wings. One houses the reception room, principals' offices, and health service rooms with an isolation room and bathroom. The other wing houses men's and women's lavatories, workroom, guidance room, and maintenance storage areas, and teachers' lounge which includes a multiple-use cooking and refrigeration unit.

The plan also includes a visual aid library building and cafeteria building, both of which are scheduled for construction when funds are made available.

The general plan also provides for an outdoor assembly area, centrally located between the main units on the site.

It is our belief that the more educational requirements can be integrated with the outdoors, the closer are we to integrating the child in the process of learning. That is one reason we have favored the "dispersed" plan of small building units, large window areas, outdoor corridors, indoor-outdoor play and work areas adjoining every classroom, outdoor assembly area, and an outdoor dining area to adjoin the proposed cafeteria.

The enclosed outdoor kindergarten play area is actually used as a part of the rooms themselves. The easy freedom of movement between indoor and outdoor "rooms" provides a flexibility of activity otherwise not possible.

Naturally costs were important in the planning of Warren Lane. During a period of peak building costs and labor shortages, the results obtained are a commendation for sound planning in all phases, including use of materials and progressive engineering principles.

Total cost of units completed was $292,813. With a site development cost of $70,367, the total project cost was $362,760. Present enrollment from kindergarten through sixth grade is 772.

Individual units were built at the following prices: administration building, $59,900, or $12.50 a square foot; kindergarten building, $33,926, or $9.39 a square foot, including outdoor terrace; one classroom building (including playground toilet and work area room) $37,014, or $9.38 a square foot; and six classroom buildings, each at $26,925.50, at $9.38 a square foot.

Structurally, Warren Lane was built with reinforced brick bearing walls, and inverted steel joists to give a pitched flat roof and a double-pitched ceiling for efficient use of daylight combined with

For more facts use Inquiry Card. SM-21P

TO PROLONG THE LIFE OF YOUR MOVIE FILM

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S.V.E. • McGRAW-HILL
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FILM PROTECTIVE PROCESS
The SUPER VAPORATE
PROTECTS AGAINST Scratches, Fingermarks, Oil, Water and Climatic Changes
ONE TREATMENT LASTS THE LIFE OF THE FILM
Brittle Film Rejuvenated
Look For Vacuumate On The Leader!
LABORATORIES IN KEY CITIES THROUGHOUT U.S., CANADA AND PHIL. ISLS.
Write for Information Now
VACUUMATE CORP., 446 W. 42nd ST., N. Y.

For more facts use Inquiry Card. SM-22P

Just off the press-

"BETTER LIGHT FOR OUR CHILDREN"

a simply written presentation on daylight control

Over the past ten years, Owens-Illinois, in collaboration with the University of Michigan, has made an extensive study of the daylighting of classrooms with light-directing glass block. Many of our findings were reported in a series of lectures to architectural groups.

Because of the widespread interest displayed, we have condensed the lecture material in a non-technical 24-page book—"Better Light For Our Children." It is brief and to the point, yet contains important facts and fundamentals of daylight control for school classrooms.

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Light Years Ahead

(Continued from page 17)

bilateral lighting and large window areas.

Ceilings were acoustically treated with an asbestos material sprayed on with a gun. Interior non-bearing partitions are solid lath and plaster. Floors are all asphalt tile. Each classroom building is served by separate gas-fired furnaces. The kindergarten building and primary rooms are equipped with radiant heating as well as the forced air systems.

All outdoor covered work areas adjoining each classroom are equipped with cupboard space, wash basins, and drinking fountains. All classrooms are equipped with cupboard space and wash basins.

Classrooms are all decorated in pastel shades, for colors are considered important in adding to the general atmosphere of friendliness and comfort, both to the eyes and to the satisfaction of the child.

It should seem obvious by now that Warren Lane was conceived and executed with a definite purpose in mind—a contemporary approach to unite architectural techniques and educational requirements of a progressive system into a mutually functional unit.

The proposition on which Warren Lane was conceived was that the best modern teaching can be carried on in contemporary school buildings.

The general evaluation after nearly two years of use is overwhelmingly favorable. But there are still some teachers untrained in the full scope of modern education as it is practiced in the Inglewood City School System who, therefore, do not make full use of its facilities.

Many teachers of the "old school," however, have changed their concepts considerably after being given the opportunity to teach in this type of school. Their new classrooms gave them a freedom to change which they had never had before.

In answer to the question often put to me as to whether we have found that this type of school is an improvement over the traditional type of school, my reply is:

Very definitely yes. It is unfortunate that we cannot conduct a scientifically accurate survey to measure the comparison, but we can arrive at some satisfying answers by asking some questions of ourselves: Is our program working more smoothly? Do we feel we are progressing more rapidly? Do we have as many problems with our children? And so forth.

When the teachers tell us that in these new classrooms they can do things with the children they *should* be doing and by comparison the old type of classroom is "like working in a coal mine," we are confident that we are going in the right direction.

SCHOOLS that rent audio-visual aids from film libraries have a definite obligation to return the films in the condition expected by the library. A recent article in the *Indiana University Audio-Visual Center Bulletin* suggests several ways in which the borrower can help the film library and get better and cheaper service.

Films should be returned undamaged, and on the dates due. In addition, they should not be rewound. Inspectors must check the prints; if films are sent back without being rewound, one running is sufficient to check and bring the film back to correct running order. If films are rewound, two runnings are necessary.

The suggestion is made that schools purchase extra 400-foot, 800-foot, and 1,200-foot reels so that all films can be returned without rewinding.

The savings incurred by eliminating unnecessary damage and working time can be passed on to the customer in several ways. The money can be used for added professional service, for purchasing more material, or for decreasing the rental rate.

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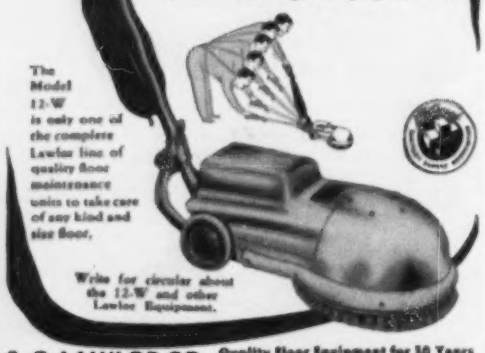

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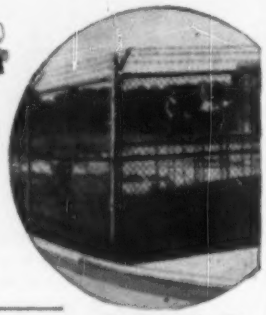

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State and Local Financing of School Programs

(Continued from page 17)

munity can have opportunity to levy the taxes they are willing to pay to support their schools. This means that state-imposed tax ceilings must be eliminated. It means that local boards must have reasonable freedom to levy taxes sufficient to enable the community to provide its fair share of the funds essential for a foundation program. And beyond that, the citizens of the community must be given opportunity to vote additional taxes for school support if desirable.

2. The evidence available indicates rather clearly that a partnership program should be developed. The state should not attempt to provide all of the funds from state sources. Reasonable local effort should be required and expected. If the state attempts to provide all of the funds there is too much danger that it will try to impose so many detailed controls, in order to safeguard expenditure of these funds, that local initiative will be stifled. Funds provided on a partnership basis should give the maximum opportunity for local effort and initiative.

Foundation Program Needed

3. Each state should develop a comprehensive, balanced foundation program. It is not enough for a state to provide aid for teachers' salaries, for transportation, or for certain other isolated aspects of a program. Furthermore, a state cannot expect to provide a whole series of special-purpose funds and have a balanced program. It is important in the program to provide for all essential services and facilities including current expenses and capital outlay. There should be no need for any state to have more than two or three different funds, at the most, when the program is properly developed.

4. After the necessary services and facilities have been determined, available techniques should be applied to make it possible to translate these into costs on an objective basis. Subjective factors should be eliminated. Any person with a knowledge of the program and proper competence should be able to apply these techniques and get similar results in terms of dollars and cents for any school system in the state.

Avoid Hidden Rewards

5. Care must be exercised to see that the program does not include hidden rewards that will result in encouraging indefensible small districts and schools. Such rewards should be scrupulously avoided. Instead there must be recognition of the fact that some isolated schools will have to exist and that provision must be made for them. If the local citizens want to maintain non-isolated small districts and schools, the extra cost should come from extra local effort.

6. Objective procedures must be applied in determining an equitable and reasonable local tax effort. Uniform assessment practices must be established, or a ratio should be developed which can be applied objectively in determining the funds that would be provided from uniform effort were assessment practices equitable. If the problem cannot be solved directly through adjusting assessment practices or developing ratios based on careful studies, an index of taxpaying capacity must be applied. This is now being done in a number of states.

The application of this proposal will mean that every community in the state will make a uniform effort to support the foundation program in accordance with its ability, regardless of variations in assessment practice. To require a uniform tax effort to be applied in a state where there are marked inequities in assessments will actually result in so many injustices that sooner or later the program itself will tend to break down.

7. The funds to be provided by the state to guarantee the foundation program should of course be the difference between the cost of the objectively determined, comprehensive program and the objectively determined local funds which should be provided by local tax effort.

A program of this type regardless of its desirability cannot be developed through the efforts of educators alone. In every state and in every community there must be a comprehensive and continuous plan for studying this situation. Lay citizens must be involved in that study. The fact that representative lay citizens have an opportunity to participate with the counsel and guidance of educational leaders who understand the fundamentals of state school finance, will mean that these citizens generally should believe more strongly in the program because they have helped develop it.

When the people of any community or of any state have a direct part in developing a program which they recognize as sound they will be in an excellent position not only to help to provide adequate school support but also to help eliminate inequities which now cause discontent.

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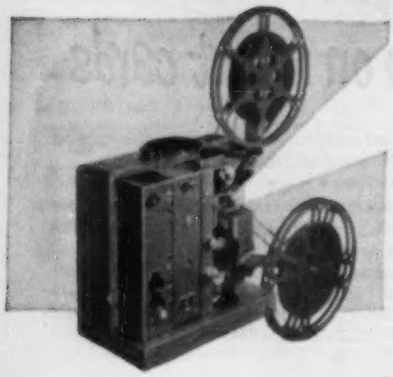

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